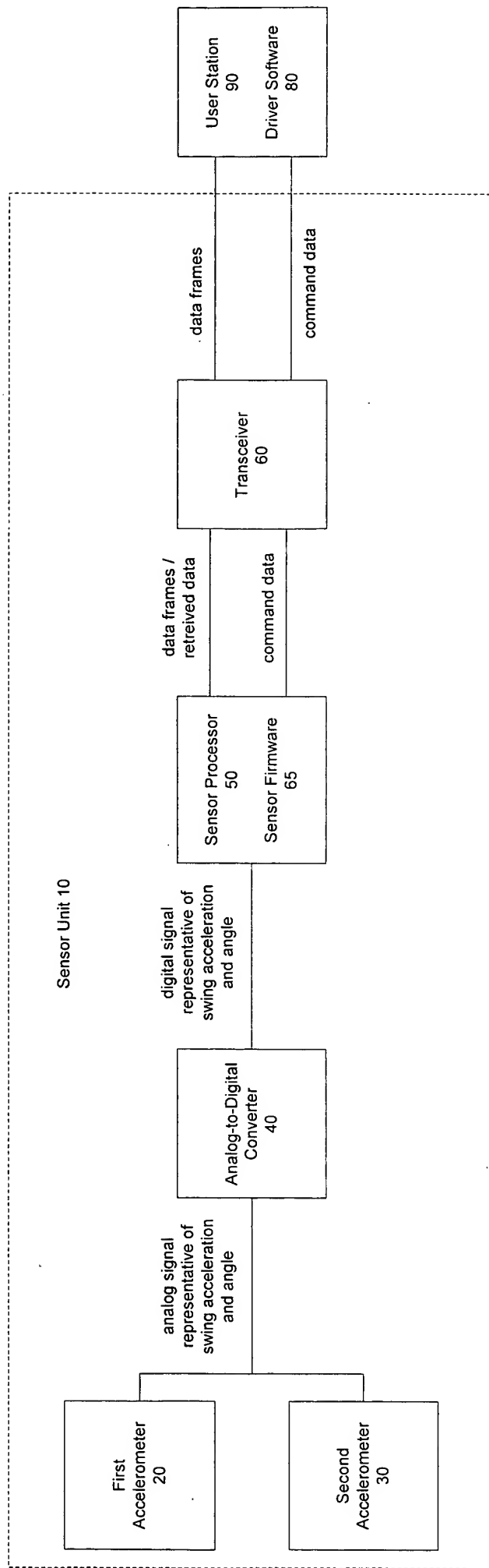


Fig. 1



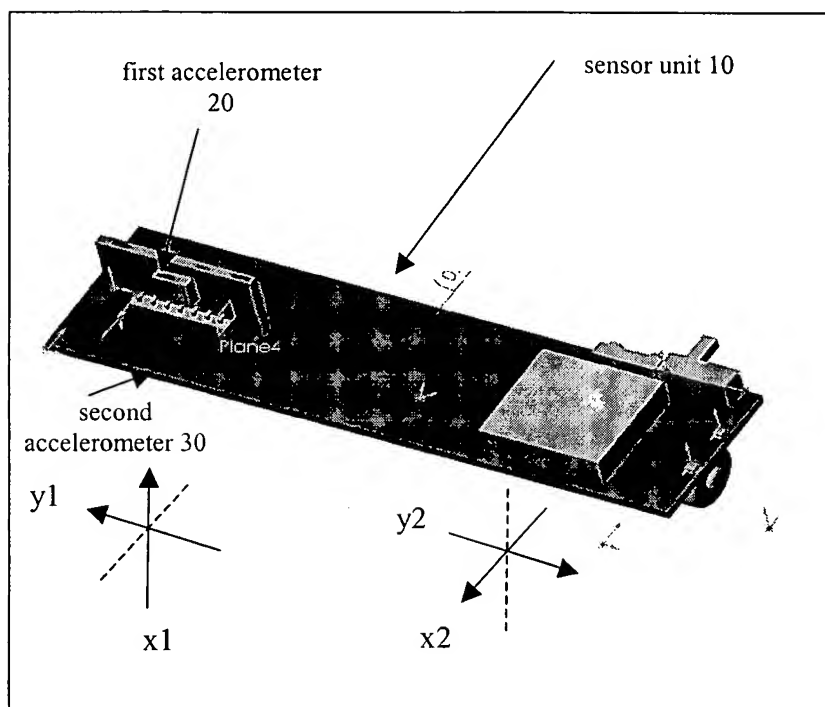


Fig. 2

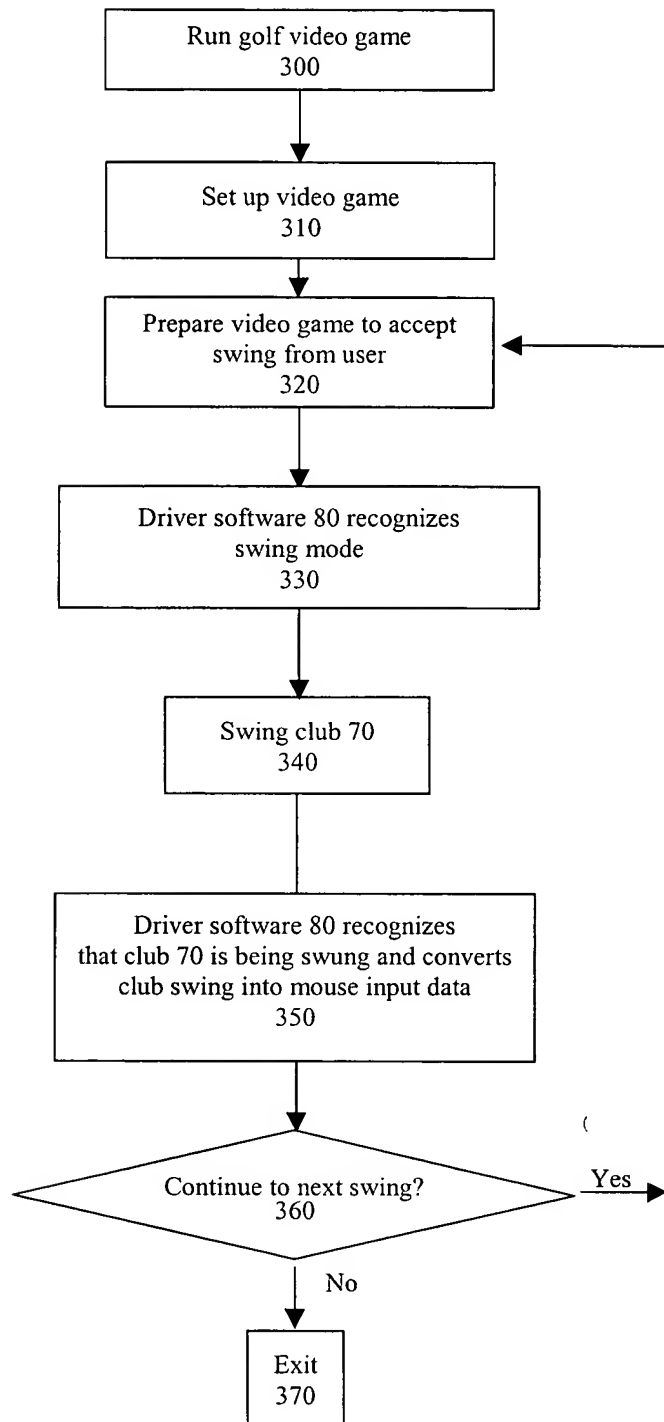


Fig. 3

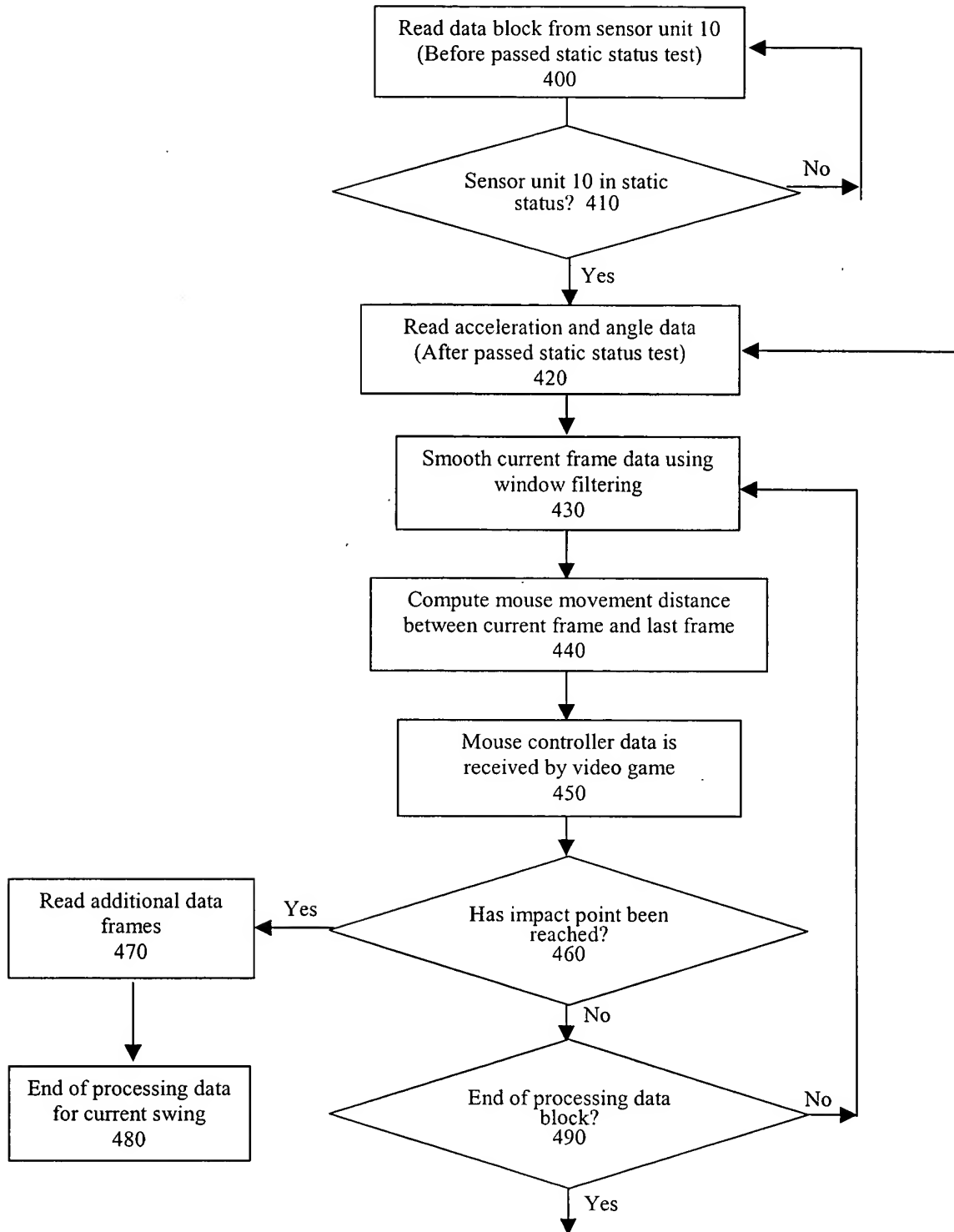


Fig. 4

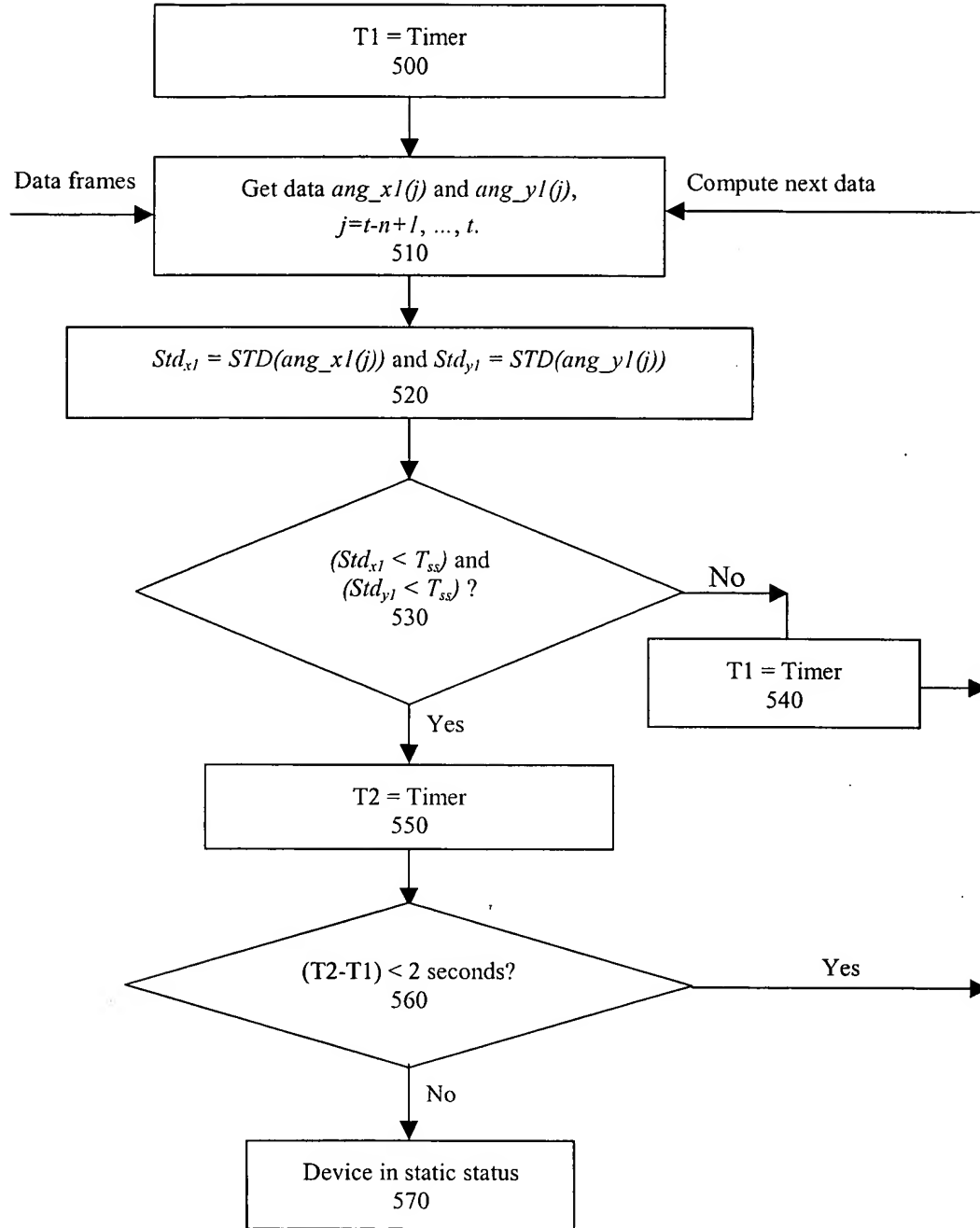


Fig. 5

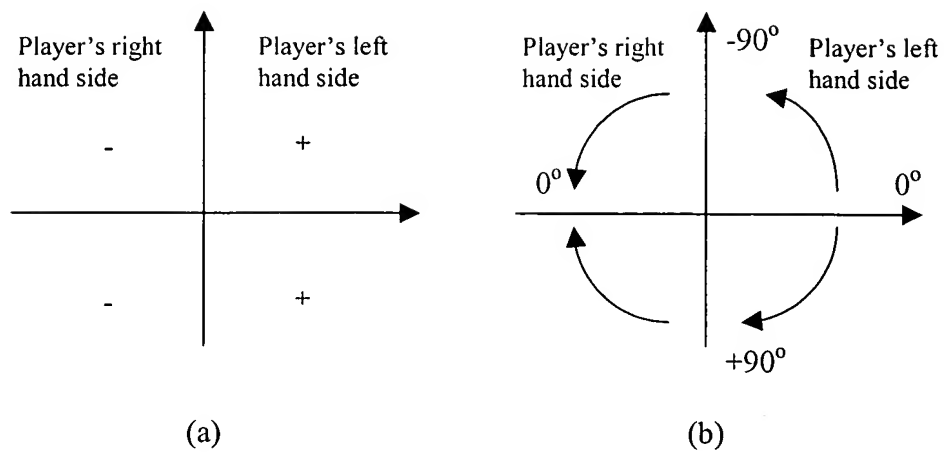
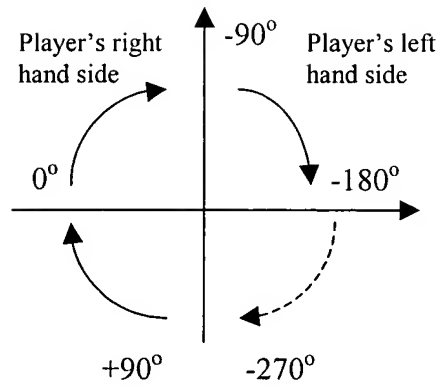
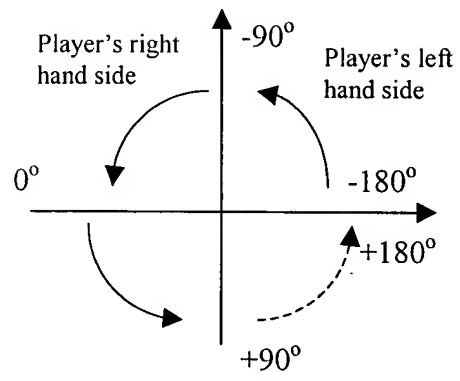


Fig. 6



(c)



(d)

Fig. 6

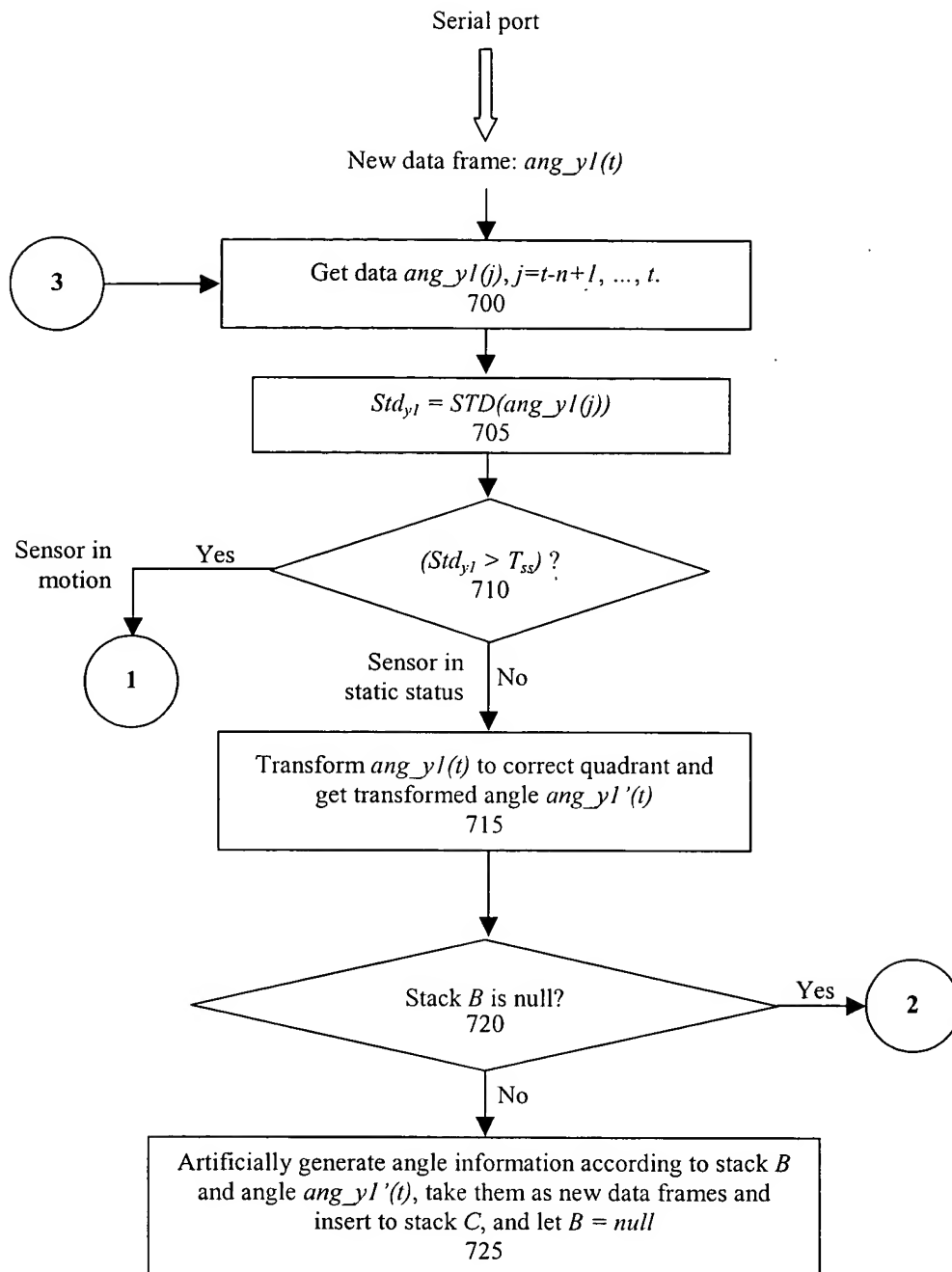


Fig. 7(a)

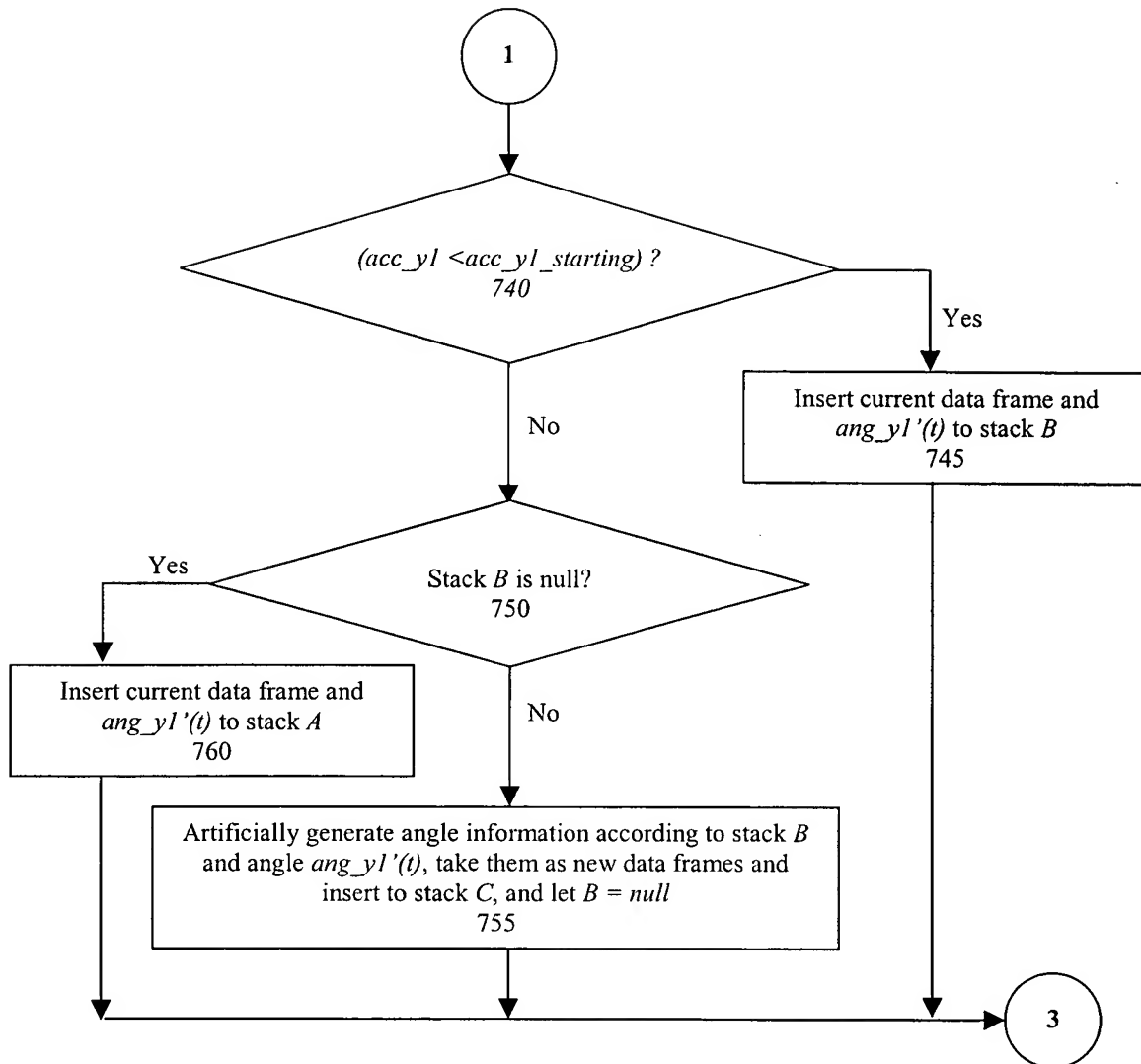


Fig. 7(b)

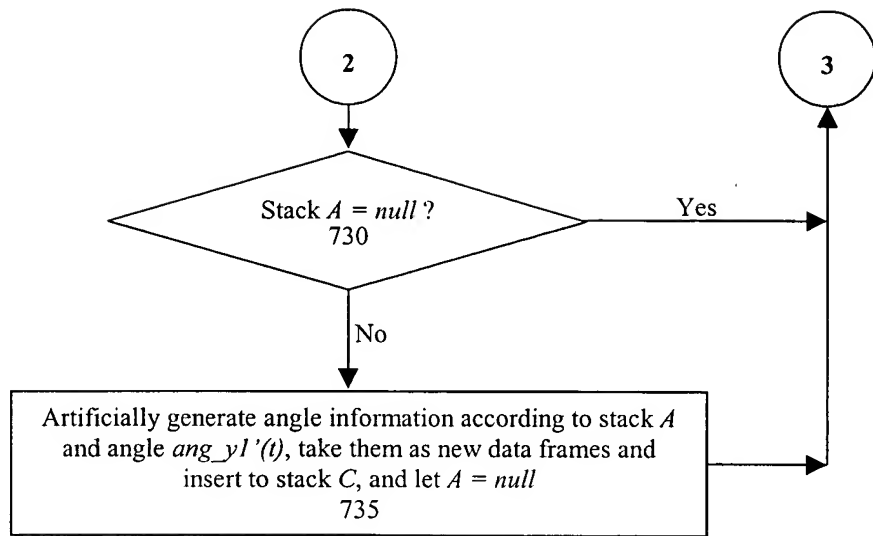


Fig. 7(c)

```

If (  $ang\_y1(t) \geq 0$  and club is swing up ) Then
    If (  $ang\_x2(t) > 0$  ) Then  $ang\_y1'(t) = -180 - ang\_y1(t)$ 
ElseIf (  $ang\_y1(t) > ang\_y1\_starting - 60$  and club is swing down and  $ang\_x1(t) \leq 0$  ) Then
     $ang\_y1'(t) = 180 - ang\_y1(t)$ 
ElseIf (  $ang\_y1(t) \leq 0$  and club is swing up ) Then
    If (  $ang\_x2(t) \geq 0$  ) Then
         $ang\_y1'(t) = -180 - ang\_y1(t)$ 
    ElseIf (  $ang\_x2(t) < 0$  ) Then
         $ang\_y1'(t) = ang\_y1(t)$ 
    End If
End If

```

Fig. 8

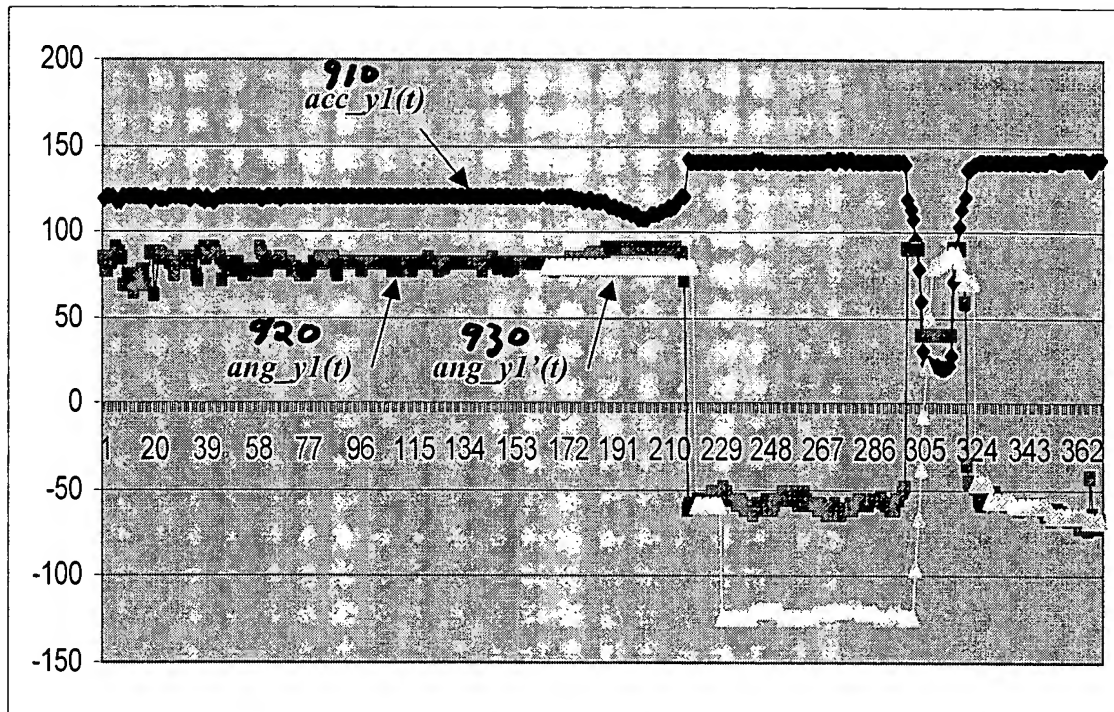


Fig. 9

Input: angle_change and current_angle; Output: distance

- 1) **Let** distance = angle_change
- 2) **If** (swing down **And** current_angle > 90) **Then** distance = distance * 2
- 3) **If** (swing up) **Then**
- 4) Suppose a) current_angle < 45 **And** current_angle >= -45; or b) current_angle < -45 **And** current_angle >= -90; or c) current_angle < -90 **And** current_angle >= -145; or d) current_angle < -145 **And** current_angle >= -180; or e) current_angle < -180. **Then Let** R = 1.25, 1.5, 5, 7, 10 corresponding to a)-e) respectively.
- 5) **Let** distance = distance * R
- 6) **End If**
- 7) **If** (swing down) **Then**
- 8) Suppose a) current_angle <= -180; or b) current_angle <= -135 **And** current_angle > -180; or c) current_angle <= -90 **And** current_angle > -135; or d) current_angle > -90 **And** current_angle <= 0; or e) current_angle > 0 **And** current_angle <= 30; or f) current_angle > 30 **And** current_angle <= 90. **Then Let** R = 12, 10, 8, 6, 5, 5 corresponding to a)-f) respectively.
- 9) **Let** distance = distance / R
- 10) adjust distance value according to acceleration acc_y1.
- 11) **If** (distance value is small) **Then** adjust it according to the club's position
- 12) **End If**
- 13) **If** (club is not in motion) **Then Let** distance = 0
- 14) **If** (club passed starting position **And** distance < 5) **Then Let** distance = 5

Fig. 10(a)

Input: angle_change and current_angle; Output: distance

- 1) distance = angle_change
- 2) Suppose a) current_angle > starting_angle - 15; or b) current_angle > starting_angle - 30 **And** current_angle <= starting_angle - 15; or c) current_angle > starting_angle - 45 **And** current_angle <= starting_angle - 30; or d) current_angle > starting_angle - 60 **And** current_angle <= starting_angle - 45; or e) otherwise. **Then Let** R = 12, 12, 8, 8, 4 corresponding to a)-e) respectively.
- 3) **Let** distance = distance * R
- 4) **If** (swing down) **Then**
- 5) adjust distance value according to acceleration acc_y1.
- 6) **If** (distance value is small) **Then** adjust it according to the club's position
- 7) **End If**
- 8) **If** (club is not in motion) **Then Let** distance = 0
- 9) **If** (club passed starting position **And** distance < 5) **Then Let** distance = 5

Fig. 10(b)

Input: angle_change and current_angle; Output: distance

- 1) distance = angle_change
- 2) Suppose a) current_angle > starting_angle - 15; or b) current_angle > starting_angle - 30 **And** current_angle <= starting_angle - 15; or c) current_angle > starting_angle - 45 **And** current_angle <= starting_angle - 30; or d) current_angle > starting_angle - 60 **And** current_angle <= starting_angle - 45; or e) otherwise. **Then Let** R = 24, 24, 16, 16, 8 corresponding to a)-e) respectively.
- 3) **Let** distance = distance * R
- 4) **If** (swing down) **Then**
- 5) adjust distance value according to acceleration acc_y1.
- 6) **If** (distance value is small) **Then** adjust it according to the club's position
- 7) **End If**
- 8) **If** (club is not in motion) **Then Let** distance = 0
- 9) **If** (club passed starting position **And** distance < 5) **Then Let** distance = 5

Fig. 10(c)

```

Input: distance; Output: distance_loop() and distance_number
1)  Suppose club is in a) Putting status; or b) Chipping status; or c) Full swing
    status. Then Let R = MAX_LOOP_STEP_PUTT,
    MAX_LOOP_STEP_CHIP, MAX_LOOP_STEP_NORMAL, respectively.
2)  distance_number = distance / R
3)  For k = 0 To distance_number-1
4)    distance_loop(k) = R
5)  Next k
6)  If (distance_number >= 1 ) Then
7)    distance_number = distance_number - 1
8)  Else
9)    distance_loop(distance_number) = distance
10) End If

```

Fig. 11